Staff Workshop
Portfolio Analysis and its Potential Application to Utility Long-Term Planning
June 4, 2007
9 a.m.

California Energy Commission
1516 Ninth Street, Sacramento, CA
Hearing Room A, First Floor

Discussion Topics

1. Introduction and background (*CEC staff – 10 min*)
    a. The changing environment in IOU planning and procurement
    b. 2006 IEPR commitment to examine portfolio-based valuation
    c. AB 57 and the California IOU long-term planning process
2. Concerns with the status quo (*CEC staff – 10 min*)
3. Modern Portfolio Theory (*London Economics International – 30 min*)
    a. MPT overview
    b. Application to IOU planning
4. Utility planning in the west
    a. Overview of LBNL 2005 study and conclusions therein (*CEC staff – 15 min*)
    b. California IOU Procurement & 2006 Long-Term Resource Plans (PG&E, SCE, and SDG&E invited – *20 min each*)
5. Case studies of planning using MPT or derivatives
    a. Northwest Power and Conservation Council's 5th Power Plan (*NWPCC – 60 min*)
    b. Additional case studies/lessons for CA (*London Economics International – 60 min*)
6. Implementation Issues (*CEC staff – 20 min*)
    a. How could portfolio analysis be applied in California
    b. Suggestions for further research

Questions of Interest

Risk Assessment and Procurement

- Can PA provide meaningful information for the procurement process?
- What risk assessments are or should be undertaken in evaluating responses to RFOs? Are additional assessments necessary or desirable?
- How should resources that potentially expose ratepayers to different types or levels of risk be compared to each other?

General/Long-term planning

- How do IOUs currently assess risks in their long-term plans?

- Are there any improvements that could be made to the current CPUC/IOU planning process with regard to:
    - types of risks that are considered
    - how risks are analyzed or measured
    - how different resources and technologies are/could be evaluated
    - number of candidate portfolios/plans considered for analysis
    - long-term composition of utility portfolios with regard to fuel or technology diversity
- Would planning exercises based on PA add value to the current long-term planning process?
- If so, how should it be incorporated?
    - in place of current assessments
    - to supplement current assessments
    - to establish required levels of specific technologies
    - to guide IOU resource procurement

Level of Evaluation

- What is the relationship between evaluation of the portfolios of individual utilities and evaluation of the state's portfolio?
- How are utility assessments of their portfolios and reliability (largely a function of supply and demand conditions over a larger area) linked?
- Who should be primarily responsible for conducting risk assessments and at what geographic level?
    - IOUs with oversight
    - CEC, CPUC, or other governmental entity
    - Both, with IOUs assessing their own portfolios and third parties taking a statewide perspective

Implementation Issues

- What are the barriers to implementing PA in long-term planning?
    - Cost, technical/data requirements
    - Uncertainty regarding values of key drivers (e.g., future gas prices, carbon costs)
- How might such barriers be dealt with?
- Do they suggest specific approaches to incorporating considerations of risk into the planning process?
- Are there significant risk factors that are sufficiently difficult to quantify or monetize as to suggest specific alternative approaches to their consideration?
    - If so, which ones?
    - How should they be weighted/assessed?
    - When in the process should they be considered?
- When assessing the set of alternatives that responses to an RFO represent, do the IOUs consider how each of the alternatives will not only fit into the current portolio, but the portfolio that the utility will have/need 10-15 years down the road (i.e., after several more RFOs)? Staff is uncertain as to whether one can (or how

one might) model this “problem,” and whether it is one with a “solution” given the need to procure energy and capacity as loads grow.

Fuel price and carbon cost uncertainty

- Could additional types of analyses be undertaken to evaluate fuel price and carbon risk and provide more meaningful characterization of these risks?
- Do current confidential filings provide sufficient information for policymakers?

Natural gas price risk

- How valuable are efforts to assign probability distributions to future natural gas prices?
- What are the difficulties and uncertainties associated with coming up with such estimates?
- What are the limitations of analysis which require them?
- Would it be just as well to say “We don’t know what the underlying distribution of the long-run gas price is, we’re just as well off demonstrating the impact of different gas prices on sample portfolios and leaving it at that?”

Carbon risk

- How should carbon risk be evaluated in light of AB 32?
- Given that the details of the cap-and-trade program are yet to be worked out, what would constitute reasonable approaches to evaluating carbon risk in the LTPP?
- Do estimated/assumed probability distributions of carbon costs have substantial worth or would some sort of scenario analysis be of equal value? What factors should be considered when bounding the distribution of potential carbon costs?

Discount rates

- Should different discount rates be used to evaluate cost streams with different volatilities/levels of uncertainty (i.e., use of a lower rate for riskier cost streams)?
- Is it appropriate to use the utility’s own weighted cost of capital in their procurement and planning assessments?
- What would the appropriate weight be for a regionally based analysis?